

CAN YOU GIVE ME DIRECTIONS TO THE GAME?

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Topic: Using GIS to provide written and visual instructions to “away” athletic events

Estimated Time: three class sessions

Grade Level: Jr. High/Middle School

Purpose: To familiarize students with the use and capabilities of GIS.

National Geography Standards Addressed:

Standard 1: How to use maps and other geographic representations, tools, and technologies to acquire, process, and report information from a spatial perspective.

Standard 3: How to analyze the spatial organization of people, places, and environments on Earth's surface.

Standard 4: The physical and human characteristics of places.

Standard 11: The patterns and networks of economic interdependence on Earth's surface.

Standard 12: The processes, patterns, and functions of human settlement.

Standard 18: How to apply geography to interpret the present and plan for the future.

Indiana Social Studies Standards addressed:

WG.1.3 Use locational technology (remote sensing, Global Positioning Systems [GPS] and Geographic Information Systems [GIS]) in order to establish spatial relationships.

WG.1.5 Ask geographic questions* and obtain answers from a variety of sources, such as books, atlases, and other written materials; statistical source material; fieldwork and interviews; remote sensing; word processing; and GIS. Reach conclusions and give oral, written, graphic, and cartographic expression to conclusions.

WG.2.5 Explain that the concept of “region” has been devised by people as a way of categorizing, interpreting, and ordering complex information about the earth.

WG.6.5 Understand the relationships between changing transportation technologies and increasing urbanization. (Economics; Individuals, Society, and Culture)

Objectives: Upon completion of this activity students will . . .

1. Be able to GIS for research and mapping purposes.
2. Be familiar with major thoroughfares of their region.
3. Have heightened their ability to estimate travel times by incorporating distance, mode of travel and urban congestion into the formula.
4. Be familiar with the streams/rivers of their region and the watershed in which they live. (This element is added to meet the 2001 Geography theme of “rivers.”)

Materials Required:

- Fall sports schedule from the school
- Computers w/internet access and printer. (Alternately, if access to computer lab is not available the lesson can be done with the class using a TVator or projector hooked up to one unit.)
- ESRI software

Procedures:

1. Have a student verbally explain to the class how to get to a particular school (choose a difficult location). Ask how many students could confidently relay that information to their parents. Another approach would be to have the student write instructions and/or draw a map on the board.
2. Using the sports schedule, survey students to see how many know the best travel route to each of the away schools. Assuming that most won't know, explain the objectives of the lesson.
3. Once internet has been accessed students should take the following steps:
 - A. Go to: http://terraserver.homeadvisor.msn.com/terra_usgsdoqs.asp
 - B. Type in the name and state of the town in which the school is located.
 - C. Select the "Topo" map, which will show the desired location on a map with transportation routes. If necessary zoom in/out using the "+/-" key.
 - D. Note the major transportation route(s), which lead into that town.
 - E. Change to the "Image" map, which will display an aerial photograph of the same area.
 - F. Zoom in on the aerial photograph to confirm that you have found a school (large buildings and athletic fields become apparent). Students may not successfully locate a school the first time they zoom in, but by backing out and panning directions in conjunction with the zoom feature the school can be found.
 - G. Return to the "Topo" view. It will now tell you the basic location of the school (in the town, NW of the town, etc . . .
 - H. Now open the Arc Explorer software. (start, programs, ESRI, Arc Explorer 2.0)
 - I. Click on WWW in the upper left-hand corner.
 - J. Click on "Add Theme" which is a large, bold + in the first row of tools.
 - K. Under AEWeb click on USA Basemap.
 - L. Drag a box on South Central Indiana. This will zoom in on the region. Continue to drag boxes on the region until Nashville and the prospective opponent's town appear.
 - M. Minimize the map and open your word processor.
 - N. Type out the verbal instructions to the town.
 - O. Returning to the map, click on the "measure" tool (a ruler w/arrows pointing either direction). Measure the distance from the selected site to your own school. When doing this, do not measure a straight line!! In order to get an accurate assessment of miles you will travel you must follow the path of the road. Don't forget to add this info. to your written description.
 - P. Return to the map. Click back on the zoom tool. This time, drag a small box on the area in which you believe the school to be located.

Q. Note the names of the streets/drives needed to traverse to reach the school from the main thoroughfare. Return to the word Processor and type those instructions

4. In keeping with this year's Geography Action theme, "Rivers," you should now name any/all rivers and major tributaries you will cross on the journey to the school.

A. Type in the following Internet address: <http://www-atlas.usgs.gov/>

B. Navigate through the links in the following manner: Atlas Maps; National Atlas Online, Interactive Map Browser; Go Straight to Map Browser; Zoom to Indiana.

C. Once the Indiana map appears, move to the upper right quadrant of the screen and scroll down to (and select) the following three categories and features: 1) Transportation—Roads; 2) Water—Streams and Waterbodies; 3) Reference—Cities and Towns.

D. Move to the features below the map and select The Zoom in feature ("8x."). Next, click on the area of the map where you believe Nashville should be located.

E. The map will redraw and should display the town you are traveling to, the roads you will travel and the streams they will cross. To name those streams click the identify feature and then click on that stream on the map.

5. Repeat steps 3 and 4 for each school on the schedule.
6. Students should be encouraged to check their transportation routes while in this atlas to ensure they have chosen the most direct route.

Adaptations/Extensions:

1. Students can be placed into small groups and/or can be assigned only a certain number of schools on the schedule.
2. Students can be made responsible for finding demographic information of the schools on the schedule.

A. Go to the following web address: <http://ideanet.doe.state.in.us/htmls/education.html>

B. Once there students should select "Data for one School or one School Corporation in Indiana" and then type in the name of the school for which they are seeking information.

C. Students can then select from a number of criteria. For instance, if they are interested in the size of the school against which they'll be competing they can select enrolment.

D. Students can use information they have retrieved to create tables, data bases, charts, etc . . .

3. At the USGS Atlas page (visited in 4A) teachers can find many attractive and useful information links that can be used to expand the lesson and address other Geography standards—habitat, land use, water discharge, etc...

4. The method of presentation is left up to the teacher. One suggestion is to have groups of students work collectively to draw a regional map displaying all of the opponent schools, towns and water bodies they will visit throughout the season.